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DETAILED DESCRIPTION

JPO machine translation

[Detailed Description of the Invention]

Technical field Especially this invention is applied to the data accounting accompanying access to the information resource on the data communication using the information network by information communication terminals, such as a cellular phone and a personal computer, and an information network etc. about a data accounting technique, and relates to an effective technique.

Background technique For example, data are transmitted by the data communication on information networks, such as the Internet, and received between computers in the data format called a packet. The gestalt of the dues of the network used here is divided roughly into two kinds, the passage packet quantity accounting mold which makes packet quantity (amount of data) applicable to accounting, and the connect-time accounting mold which makes the utilization time applicable to accounting. the use purposes (it is henceforth described as the use purpose), such as contents used also in which accounting approach from personal digital assistants (it is henceforth named a personal digital assistant generically), such as a cellular phone, and PHS (Personal Handyphone System), PDA (Personal Digital Assistant), mail, and VoIP (Voice Over IP), -- classifying a communication link tariff is not independently performed. [a computer, and]

That is, in the Prior art, the entrepreneur of a cellular phone or PHS acquires the communication link log on which the passage packet total which passes through a its company network was recorded, calculation is added together for a telex rate based on it, and he adds together the charge of monthly amount constant offer to a pan, and is taken as the total use tariff. In this case, a circuit switching mode and a packet communication mode are impossible for the specification for the purpose of use. Thus, in the conventional data communication, the method which can classify a telex rate into the use purpose-oriented used from the computer or the personal digital assistant is not realized. Indication of invention A use purpose-oriented telex rate distribution claim which was used from the personal computer or the personal digital assistant as one of the conditions of employment by the spread of a computer or personal digital assistants in many cases although adoption of the data telecommunication system in a company was spreading is desired.

That is, in a company etc., when using a personal digital assistant for an operating application, as compared with the case where the way for which a user is made to give and use one personal digital assistant of official and personal combination makes it use it according to official and personal affairs, giving two or more personal digital assistants, the viewpoint of management by the handling of a personal digital assistant by the user, a company, etc. to convenience is high. In this case, the telex rate generated by use to carry out business and the telex rate generated by private use are divided clearly, and although demand (this is henceforth described as an official and personal partition) of wanting to pay only the telex rate which agreed aimed at obtaining operating naturally occurs in a company side, the technical problem that the distribution claim of such a data communication tariff cannot be performed occurs with the conventional technique.

Moreover, by the conventional comprehensive accounting, the technical technical problem that various service provisions, such as improvement in service by setup of the various unit prices by the use purpose, data classification, etc., are unrealizable also

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occurs from the viewpoint of entrepreneurs who offer data transmission services, such as a cellular phone and PHS.

The purpose of this invention is in the data communication of a passage packet quantity accounting mold to offer the data accounting technique which can realize the use purpose-oriented specific charge of the information network and information resource which were used from information communication terminals, such as a computer and a personal digital assistant.

Other purposes of this invention are in the data communication using the information network by the information communication terminal to provide use purpose-oriented with the data accounting technique in which various and exact accounting is possible.

Other purposes of this invention are to offer the data accounting technique which can reconcile improvement in the convenience of the user by use of the information communication terminal of official and personal combination, and a company, and rationalization of the tariff burden by clarification of the official and personal partition of the use tariff of an information communication terminal or data communication.

Other purposes of this invention are to offer the data accounting technique which can realize various service provisions by setup of the various unit prices by the use purpose, data classification, etc.

Other purposes of this invention are to offer the data accounting technique which information, such as a use purpose-oriented use situation by the user of an information communication terminal, is grasped, and can realize exact marketing in data transmission services.

In the data accounting approach charged according to the amount of the data on the information network which the user delivered and received using the information communication terminal, this invention is classifying the amount of the data concerned and totaling for every use purpose of data, and is charged for every use purpose.

In the data accounting system which charges this invention according to the amount of the data on the information network which the user delivered and received using the information communication terminal Network segment connected to information network

A data communication path control means to fix the transfer path of the data about a specific user so that a network segment may be passed, The 1st data collection means which collects the 1st information containing the amount of the data concerned about the data which pass network segment, The 2nd data collection means which collects the 2nd information that the use purpose by each user of data who passes network segment can be specified, An accounting information generation means to generate the accounting information about the data for every use purpose based on the 1st and 2nd information It considers as the configuration to include.

As an example, a network segment is prepared in an information network and the following various functions are more specifically installed in the network segment. As a function installed in a network segment The function to collect the packets which pass a network segment (henceforth) The authentication function for specifying the user from the personal digital assistant and computer which are described as a packet collection function (henceforth) The menu facility which navigates the personal digital assistant after authentication described as an authentication function, or the user of a computer, The function (it is henceforth described as a data communication path fixed function) to make all the data communication after authentication go via this network segment

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compulsorily, and to specify the use purpose, the function (it is henceforth described as an accounting information generation function) which generates accounting information, *****.

The use purpose of the authentication function of this network segment is informed to a user that data communication from a personal digital assistant and a computer is performed via the network segment of this invention as a use procedure. That is, the user who wishes service of the official and personal partition of the telex rate of data communication notifies surely needing authentication by the authentication function of this network segment.

Although a menu facility displays the menu according to the operating frequency of the user who succeeded in authentication and the use is urged to it, it is not an indispensable function of this invention.

Next, it is made for the data communication which the user concerned performs to surely go via this network segment by the data communication path fixed function. The use purpose which the user used is recorded in this data communication path fixed function (this is henceforth considered as communication link record). And all the data that pass this network segment are always recorded by the packet collection function (this is henceforth considered as packet record). An accounting information generation function generates the accounting information which realizes the specific charge for every use purpose from communication link record and packet record.

According to such a data accounting technique of this invention, the use purpose from an information communication terminal is specified, the telex rate generated according to service of a use place is totaled respectively, and the tariff total which added respectively the charge classified by service of information for the purpose of use to this is attained. Furthermore, a setup of an accounting unit and a unit price can be freely enabled also with a telex rate and the charge of information at any time.

Moreover, offer of the user information which accessed the information resource which the information provider concerned offers to the information provider using the information acquired by the packet collection function and the data communication path fixed function is attained, for example, PUSH mold marketing of showing a specific user specific information and service from an information-provider side becomes possible. In addition, an information provider can be provided also with the information on a use situation effective in which use purpose point has use of which, and marketing management.

To the provider entrepreneur of a network or application, it becomes possible to offer the degree of freedom of accounting. For example, discount of a communication link tariff or an information tariff is carried out by the count of use, or the various service provisions of ** to which the use purpose point menu is changed become realizable.

Easy explanation of a drawing Drawing 1 is the conceptual diagram showing an example of the whole configuration of a data accounting system which enforces the data accounting approach which is the gestalt of 1 operation of this invention.

Drawing 2 is the conceptual diagram showing an example of the data accounting structure of a system which enforces the data accounting approach which is the gestalt of 1 operation of this invention.

Drawing 3 is the conceptual diagram showing an example of an operation of the data

accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 4 is the conceptual diagram showing an example of an operation of the data accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 5 is the conceptual diagram showing an example of an operation of the data accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 6 is a flow chart which shows an example of an operation of the data accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 7 is a flow chart which shows an example of an operation of the data accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 8 is the explanatory view showing an example of the menu screen used by the data accounting approach and data accounting system which are the gestalt of 1 operation of this invention.

Drawing 9 is the block diagram showing an example of an operation of the data accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 10 is the block diagram showing an example of an operation of the data accounting approach which is the gestalt of 1 operation of this invention, and a data accounting system.

Drawing 11 is the block diagram showing an example of the data accounting approach which is the gestalt of other operations of this invention, and the data accounting structure of a system.

Drawing 12 is a flow chart which shows an example of an operation of the data accounting approach which is the gestalt of other operations of this invention, and a data accounting system.

The best gestalt for inventing The gestalt of operation of this invention is hereafter explained to a detail, referring to a drawing.

(Gestalt 1 of operation)

Drawing 1 is the conceptual diagram showing an example of the whole configuration of a data accounting system which enforces the data accounting approach which is the gestalt of 1 operation of this invention, and drawing 2 is the conceptual diagram showing an example of the data accounting structure of a system which enforces the data accounting approach of the gestalt this operation.

The conceptual diagram in which drawing 3 , drawing 4 , and drawing 5 show an example of an operation of the data accounting approach of the gestalt this operation and a data accounting system, drawing 6 , and drawing 7 The flow chart and drawing 8 which show an example of an operation of the data accounting approach of the gestalt this operation and a data accounting system the block diagram in which the explanatory view showing an example of the menu screen used by the data accounting approach and data accounting system of a gestalt of this operation and drawing 9 show an example of an operation of the data accounting approach of the gestalt this operation and a data accounting system -- it comes out.

The gestalt of this operation takes and explains the data accounting in the case of accessing the information resource on WWW (World Wide Web) (it being hereafter written as Web) built in HTTP (Hyper Text Transfer Protocol) as an example of an information network on the Internet which used the TCP/IP communications protocol from an information communication terminal to an example.

That is, although URL (Uniform Resource Locator) is used as pointer information for accessing a specific information resource in Web, the gestalt of this operation takes and explains the case where each user's use purpose is identified in this URL to an example.

A design and installation of a 1-1. network With the gestalt of this operation, in order to make accounting like the after-mentioned possible, a user installs the surely used network segment. This is realized as a network segment which can communicate [that the Internet and various network providers, and connection are possible or]. Moreover, the data besides the object of data accounting of the gestalt of this operation are designed so that it may pass through none of these networks. It comes to fulfill the above-mentioned conditions by installing only the hardware which realizes each function of the gestalt of this operation, and a necessary minimum network device in a network segment.

Specifically so that it may be illustrated by drawing 1 A personal digital assistant 101 and a personal computer 102 (It is only hereafter described as a computer 102) etc. -- to the Internet 300 which a user accesses through the information communication terminal 100 Connect the network segment 201 which constitutes the data accounting system 200 which enforces the data accounting approach of the gestalt this operation, and this network segment 201 is minded. It considers as the configuration which accesses information resources, such as the internal contents server 202 in the network segment 201 concerned, the external contents server 301 in the Internet 300, and the contents server 401 in intranet 400.

The data accounting system 200 of the gestalt of this operation contains authentication function 200a, menu-facility 200b, data communication path fixed function 200c, 200d of packet collection functions, accounting information generation function 200e, etc.

1-2. installation of the hardware of each function each function, such as authentication function 200a which constitutes the data accounting system 200 of the gestalt of this operation, menu-facility 200b, data communication path fixed function 200c, 200d of packet collection functions, and accounting information generation function 200e, -- a computer system and computer software -- although it consists of network devices further, the operating system of the number and the computer concerned is arbitrary. The more detailed example of a configuration of the network segment 201 which constitutes the data accounting system 200 of the gestalt of this operation in drawing 2 is shown.

In a network segment 201, by connecting to the Ethernet hub 208 the computer which realizes each function of authentication function 200a - accounting information generation function 200e and which is not illustrated, LAN (Local Area Network) is constituted and this LAN is connected to the Internet 300 and intranet 400 through a router 207 and a router 209.

The user management database 203 is connected to authentication function 200a and menu-facility 200b. The user management database 203 consists of information, such as

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User Information 203a, user code 203b, password 203c, 203d of login IDs, terminal ID203e, the telephone number of 203f, 203g of firm names, and 203h of menu information etc.

The communication link record database 204 is connected to data communication path fixed function 200c, and the communication link record collected in the data communication path fixed function 200c concerned is stored in it. That is, the communication link record database 204 consists of information, such as date time-of-day 204a, transmitting agency IP address204b, transmitting agency TCP port number 204c, terminal ID204d, URL204e, and official and personal distinction flag 204f. 200d of packet collection functions consists of a packet counter 205 and a packet collection database 206. As for the packet collection database 206, information, such as transmission place IP address206a, transmitting agency IP address206b, transmission place TCP port number 206c, transmitting agency TCP port number [of 206d], sequence number 206e, identification number [of 206f], and offset flag 206g, 206h of the date time of day, and data size 206i, is stored.

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1-3. Packet collection The packets which pass through the inside of the network segment 201 of the gestalt of this operation by 200d of packet collection functions, and all the packets generated within the network segment 201 are collected and recorded. What is recorded is all information included in a packet (IP packet in an Ethernet frame).

Important things are transmission place IP address206a, transmitting agency IP address206b, transmission place TCP port number 206c, transmitting agency TCP port number [of 206d], sequence number 206e, identification number [of 206f], and offset flag 206g, 206h of the date time of day, data size 206i, etc., and these are all information included in the IP packet by which it was standardized in the Ethernet frame. The packet record which recorded all the information included in a packet is generated, and it stores in the packet collection database 206.

Among the stored information, since it collates with the communication link record stored in the communication link record database 204 generated by data communication path fixed function 200c and a user is specified, transmitting agency IP address206b, the transmitting agency TCP port number of 206d, transmission place IP address206a, and transmission place TCP port number 206c are used. Sequence number 206e, identification number [of 206f], and offset flag 206g, 206h of the date time of day, and data size 206i are used in order to compute specification and the sum total of data size of the packet generated when one use purpose (URL) was used.

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1-4. Authentication By authentication function 200a, the user of a personal digital assistant 101 or the information communication terminal 100 of computer 102 grade is specified. 203d of login IDs and password 203c are published in advance in principle, and a user is notified. Furthermore, a user is notified of URL of authentication function 200a. A user surely performs authentication with a login ID and a password by authentication function 200a, when connecting with a network segment 201. The information on 203d of login IDs and password 203c is held at the user management database 203. Moreover, when terminal ID203e of the proper included in the personal digital assistant 101 or the information communication terminal 100 of computer 102 grade can be acquired, it uses for authentication at coincidence. In that case, the

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information on the terminal ID203e concerned is also held in the user management database 203.

The success or failure of authentication are notified to menu-facility 200b. When it succeeds, control moves to menu-facility 200b. When authentication goes wrong, within the count of a limit, authentication is urged to a user that it redoes again, but when the count of a failure limit is exceeded, use of the user is suspended.

A user's ID information attested here is used also for official and personal partition processing of the telex rate bill creation time by accounting information generation function 200e if needed.

The input column of a login ID and a password is displayed on a personal digital assistant 101 or the information communication terminal 100 of computer 102 grade, and a user is made to enter a login ID and a password in fact. When authentication is successful, control moves to menu-facility 200b. the case where authentication goes wrong -- that and its cause -- and the input column of a login ID and a password is displayed again. When a mistake exceeding the count of a limit is made, the login ID concerned is locked (use impossible) and the user's authentication itself is made impossible.

1-5. Induction of User by Menu (Navigation)

When authentication is successful, in order to restrict actuation of the information communication terminal 100 of a computer 102 or personal digital assistant 101 grade, the menu 500 (for example, drawing 8) according to the user is displayed, and the use purpose which can be used is fixed. It is beforehand registered into 203h of menu information on the user management database 203 which menu is displayed according to each user. When authentication goes wrong, it communicates with authentication function 200a, and checks that it is in the count of a failure limit, and authentication is made to redo. When it is over the count of a limit, that is displayed on a user and use is stopped.

That is, user information is acquired from authentication function 200a, and the menu 500 suitable for the organization to which a user belongs is displayed on a personal digital assistant 101 or the information communication terminal 100 of computer 102 grade. If a user operates it along with this menu 500, it will be judged whether URL specified by the selected menu item by referring to 203h of menu information stored in the user management database 203 is in this network segment 201 physically or it is outside.

Even if the information resource specified by specified URL is out of a network segment 201, the data communication surely comes to go via this network segment 201 by data communication path fixed function 200c. Moreover, the menu item as which a user can specify direct URL is also prepared, and also when a user specifies URL from the menu item, the data communication is designed so that it may surely go via this network segment 201.

Other than this, or is made to classify and the menu selection by the user makes it record in the thing relevant to business in the menu item similarly using the official and personal partition information beforehand set as 203h of menu information.

1-6. Control of a user's data communication path The path of data communication is fixed so that all a user's communication links may go via this network segment 201 using data

communication path fixed function 200c.

When the information resource to the internal contents server 202 specified by URL is in this network segment 201 like access, not using data communication path fixed function 200c, data communication also surely goes ** via this network segment 201. Moreover, it restricts in this case and data communication path fixed function 200c generates the communication link record which recorded which URL the user used. Remote URL substitute acquisition function 200c-1 which mentions later communication link record of URL which points out the information resource out of this network segment 201 generates communication link record. Terminal ID204d [of a user], date time-of-day 204a, URL204e, transmitting [of a user] former IP address204b, transmitting agency TCP port number 204c [of a user], and official and personal distinction flag 204f etc. is recorded on communication link record. Collection of this communication link record is performed by protocol hierarchies, such as HTTP on TCP/IP.

The packet information on all the Ethernet level that goes via this network segment 201 realized by this data communication path fixed function 200c is saved in the packet collection database 206 as packet record by 200d of above-mentioned packet collection functions, it is comparing with the information on the communication link record database 204, and the specific charge of the telex rate for every URL becomes possible. Since the server, the personal digital assistant 101, or computer 102 which distributes the contents of the URL carries out the direct communication of the data communication which acquires URL besides this network segment 201 (information resource) from a personal digital assistant 101 and the information communication terminal 100 of computer 102 grade when there is no data communication path fixed function 200c of the gestalt of this operation like the conventional technique, no packet records can be saved not passing through this network segment 201 therefore, but generation of account data is impossible.

1-7. Substitute acquisition remote [URL] In order to specify the information which the contents server 401 in the contents of the external contents server 301 on the Internet 300 out of the network segment 201 of the gestalt of this operation or intranet 400 has by URL and to enable it to use it, remote URL substitute acquisition function 200c-1 once acquires the information resource specified by URL besides a network segment 201, and it transmits it to the personal digital assistant 101 or computer 102 of a requiring agency. This remote URL substitute acquisition function 200c-1 constitutes a part of data communication path fixed function 200c.

The example of an operation of remote URL substitute acquisition function 200c-1 is shown below with reference to drawing 9. The case where the contents of Web of the network segment 201 exterior are used as an example is assumed. URL of the server of data communication path fixed function 200c is made into "http://menu.xx.co.jp/." In a server, a menu 500 is displayed on the user who succeeded in authentication. The link to the URL is set to "http://menu.xx.co.jp/agent.cgi?www.yyy.com/zzz.html" with the menu 500 of the gestalt of this operation to refer to "http://www.yyy.com/zzz.html" to a user. The part of "agent.cgi" of this URL is a part used by remote URL substitute acquisition function 200c-1. In fact, the character string this "agent.cgi" serves as arbitration. If URL is specified in such a format, remote URL substitute acquisition function 200c-1 will acquire all the contents specified by URL specified by the character string which begins

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from the degree of "?", and it will transmit the contents to a user's personal digital assistant 101 or computer 102. but When the link to other URL (information resource) is included in the contents Since immobilization of the constant data communication path to a network segment 201 cannot be performed, Contents are passed to address translation function 200c-2 mentioned later before transmitting contents to a user's personal digital assistant 101 or computer 102. What rewrote the address in a format like "http://menu.xx.co.jp/agent.cgi?www.yyy.com/zzz.html" is acquired, and it transmits to a user's personal digital assistant 101 or computer 102.

This remote URL substitute acquisition function 200c-1 also generates communication link record in the communication link record database 204.

1-8. Address Translation in Real Time Although Path of Data Communication is Fixable Using Remote URL Substitute Acquisition Function 200C-1 so that it May Pass through Inside of Network Segment 201 In order to operate this constantly, so that it may be illustrated by drawing 9 Address translation function 200c-2 which change into an above-mentioned format the address of contents, such as URL which remote URL substitute acquisition function 200c-1 acquired, on real time are prepared as a part of data communication path fixed function 200c.

In an above-mentioned example, the PURIA bend section called "http://menu.xx.co.jp/agent.cgi?" within a system is altogether inserted automatically in URL besides this network segment 201 which data communication path fixed function 200c displays by address translation function 200c-2. That is, these address translation function 200c-2 analyze URL of the contents acquired by remote URL substitute acquisition function 200c-1 on real time, rewrite to the above URL, and return contents to remote URL substitute acquisition function 200c-1 again. When the link to other URL, such as "Up.html", "middle.html", and "lower.html", is in the acquired contents as an example Contents are analyzed on real time and these links are detected.

"http://menu.xx.co.jp/agent.cgi?www.yyy.co.jp/Up.html",

"http://menu.xx.co.jp/agent.cgi?www.yyy.co.jp/middle.html", The link of contents is rewritten to URL of the form of

"http://menu.xx.co.jp/agent.cgi?www.yyy.co.jp/lower.html."

It is rewritten so that all URL in the contents which this acquired by remote URL substitute acquisition function 200c-1 may go via a network segment 201, and data communication path fixed function 200c comes to function constantly.

1-9. Contents Cache Data Communication Path Fixed Function 200C, While applying efficiently [provide more users with remote URL substitute acquisition function 200c-1 and address translation function 200c-2, and], in order to make a load mitigate, When 200f of cache functions to hold temporarily the contents by which address translation was carried out (cache) is prepared and other users or same users use contents again The contents held at a stretch to 200f of cache functions are transmitted to a user's personal digital assistant 101 or computer 102.

The contents by which the cache was carried out are set up so that it may be used, in case remote URL substitute acquisition function 200c-1 acquires contents. That is, remote URL substitute acquisition function 200c-1 checks the existence of the contents of the purpose within 200f of cache functions first, and if there are contents stored in 200f of

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cache functions, it will transmit the contents which newly acquired the contents in 200f of cache functions when there was nothing to a user's personal digital assistant 101 or computer 102. Record of use of the contents temporarily stored in 200f of cache functions by this is also saved by remote URL substitute acquisition function 200c-1 in the communication link record database 204.

It is necessary to update periodically the contents by which the cache was carried out, and they need to make original contents and the original contents in agreement. Progress of fixed time amount of the contents by which the cache was carried out eliminates them. 200f of cache functions is equipped with such various functions. Moreover, when it is judged to analyze and to be dynamic contents whether they are contents with 200f dynamic when it is dynamic contents (for example, contents from which a display condition changes according to the contents of an input of the user to the contents display screen concerned) of cache functions, it eliminates immediately after transmitting the contents acquired in 200f of cache functions to a user.

To the user of a personal digital assistant 101 or the information communication terminal 100 of computer 102 grade, after authentication makes data communication perform surely via the inside of this network segment 201, and each above function enables it to grasp the data communication situation according to the use purposes, such as URL.

1-10. Generation of accounting information By accounting information generation function 200e illustrated by drawing 10, the packet record stored in the packet collection database 206 and the communication link record stored in the communication link record database 204 are collated, and accounting information is generated. Transmitting agency IP address 204b (206b) which is the intersection of the record item of packet record and the record item of the communication link record database 204 stored in the packet collection database 206, and transmitting agency TCP port number 204c (206d) are specifically used as a key, both records are compounded, and a billing record is generated. The grand total (total of data size 206i about the URL 204e concerned) of the packet data which who generated although it uses which URL (URL 204e) when (date time-of-day 204a) and one URL (URL 204e) is perused, (terminal ID 204d) and, official and personal partition information (official and personal distinction flag 204f), etc. are included in one billing record.

The firm (firm name 203g) to which a user or a user belongs official and personal partition information At the time of the contract of the official and personal partition bill issue service which used the data accounting system 200 of the gestalt of this operation The list of URL displayed in menu-facility 200b, the flag information on URL for which a firm should be asked in it, and URL for which a user individual should be asked, Contract information, such as assignment of which [official and personal] to make into a claim place for the charge of data communication which does not go via the data accounting system 200 of the gestalt of this operation, is shown to the employment person of the data accounting system of the gestalt of this operation. Moreover, the information on URL which charges amount of information separately is set as the user management database 203 as for example, a part of User Information 203a.

Accounting information generation function 200e generates a user's accounting information based on a billing record. A billing record is totaled for every user and, specifically, a part for a part for official business and private use is once totaled. Since it

is the impossible to classify the telex rate about the telex rate which does not go via the data accounting system 200 of the gestalt of this operation, distribution of an official and personal partition claim of the telex rate is performed based on the decision matter at the time of a contract.

The difference [information / (call detail record (CDR information 600)) / on the charge of data communication from the entrepreneur of the information before accounting, a cellular phone, and PHS / detail / the telex rate which does not go via the data accounting system 200 of the gestalt of this operation] (delta) is meant.

The CDR information 600 consists of information, such as charges 607 [a total of], such as the telephone number 601, message classification / detail classification 602, the message years 603, message detail partition / message classification 604, a byte count 605, 606 packets, and a connoisseur.

The amount of data (byte count) corresponding to the specific telephone number 601 (terminal ID204d) indicated by the CDR information 600 Namely, G, Total of data size 206i about the terminal ID204d concerned which totaled the above-mentioned billing record by one terminal ID204d (it corresponds to the telephone number 601) C, If total of data size 206i for official business concerning Cp and the terminal ID204d concerned in total of data size 206i for private use about the terminal ID204d concerned is set to Cj, it will be set to $C(=Cp+Cj) < G$ and will become $\text{delta}=G-C$.

Therefore, on the occasion of creation of the accounting data sheet 700, a total with Cp which it is as a result of [by which the official and personal partition was carried out via the data accounting system 200 of the gestalt of this operation] a total, Cj, and proportional division by the contract matter of delta which it is as a result of [to have not gone] a total is generated to every user (terminal ID204d), and it indicates to each of the public detail column 701 and the private detail column 702. although not especially illustrated at this time -- each of the public detail column 701 and the private detail column 702 -- setting -- each URL (use purpose) -- another detail information may be added.

Moreover, when there is minimum charge imposed regardless of data dues every terminal ID204d, it adds to either of Cp(s) and Cj(s) which it is as a result of [by which the official and personal partition was carried out] a total, or may be made to carry out a proportional division claim according to the rate of Cp and Cj etc.

Moreover, the function to set up the unit price of arbitration to specific URL (use purpose) on the occasion of creation of this accounting data sheet 700, The function which presupposes un-charging specific URL (use purpose), the function which sets two or more URL (use purpose) as the object which sets a unit price as the unit of *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne. as one accounting unit, the function to charge amount of information, and ***** are used, and the telex rate of URL (use purpose) and the information on amount of information are added to the information before accounting. Moreover, it may be made to perform rate length according to the amount of the grand totals Cp and Cj of each official and personal telex rate.

By the above accounting information generation function 200e, the specific charge for every use purpose in the data communication using the information network of Internet 300 grade becomes possible. Moreover, the official and personal partition of a telex rate and amount of information is realizable for coincidence.

Although the case where it is provided by data according each total number of packets of

the personal digital assistants 101, such as a cellular phone and PHS, to the CDR information 600 grade from an entrepreneur is assumed as an example in explanation of above-mentioned accounting information generation function 200e, it may not be based on this but the accounting information of accounting data sheet 700 grade may be generated only by what carried out counting and was computed by the data accounting system 200 of the gestalt of this operation.

Hereafter, an example of an operation of the data accounting approach of the gestalt this operation and the whole data accounting system is explained with reference to drawing 3 , drawing 4 , drawing 5 and drawing 6 , drawing 7 , etc.

First, within the network segment 201 of the data accounting system 200, the commo data which passes through the inside of the network segment 201 concerned is always supervised and recorded on the level of an Ethernet packet in 200d of packet collection functions which consist of a packet counter 205 and a packet collection database 206.

In this condition, URL of which the user of the information communication terminal 100 is notified by E-mail etc. beforehand is used by the opportunity of arbitration. If a user accesses authentication function 200a of the data accounting system 200 through the Internet 300 (step 10, step 11, step 15) The input screen of a login ID and a password is displayed (step 12). After the input of a login ID and a password, 203d of login IDs of (step 13) and the user management database 203, The login ID inputted with reference to the entry of password 203c and user authentication collated with a password are performed (step 14), and in being authentication failure When only the predetermined count of permission makes the input of a login ID and a password retry (step 17, step 16) and retry exceeds the count of permission for it An error message to that effect is performed (step 18), account of the login ID concerned is locked (step 24), and a circuit is cut (step 25).

In an authentication success, the screen of the menu 500 which is illustrated by drawing 8 is displayed, and a user is made to choose each item (step 19).

And a user's selections in a menu 500 distinguish whether it is what accesses the information resource in a network segment 201 (internal contents server 202) (step 20).

In access into a network segment 201 While making the user of the information communication terminal 100 peruse the contents of the internal contents server 202 by the access path A1 and access path A2 which are illustrated by drawing 3 with a broken line Communication link record is recorded on the communication link record database 204 for every use of the contents (URL) of the internal contents server 202 (step 21). In this case, various processings of drawing 9 by data communication path fixed function 200c are not performed by being unnecessary.

On the other hand, when a user's selections in a menu 500 are what accesses the information resource besides a network segment 201 (the external contents server 301 and contents server 401 of intranet 400) Various processings of drawing 9 by above-mentioned data communication path fixed function 200c are performed. (By access path A3 to the external contents server 301 which is shown in drawing 4 with a broken line in access, access path A4, access path A5, and the access path A6) (In access to the contents server 401 of intranet 400) By the access path A7 shown in drawing 5 with a broken line, the access path A8, access path A9, and the access path A10 Path control is performed so that commo data may surely go via a network segment 201 (step 26), and communication link record is recorded on the communication link record database 204 (step 27).

Here, in processing of data communication path fixed function 200c of step 26, first, the existence of the purpose contents in 200f of cache functions is investigated (step 26a), when a cache hit is carried out, a user is made to send out and peruse the contents in 200f of cache functions (step 26b), and communication link record is recorded on the communication link record database 204, so that it may be illustrated by drawing 7 (step 26c).

When there are no target contents into 200f of cache functions Remote URL substitute acquisition function 200c-1 is started (step 26d). Between below an allowed value predetermined in the value of the URL error counter which manages the count of failure of URL substitute acquisition (step 26e), When substitute acquisition of URL explained by above-mentioned drawing 9 is tried (step 26f), the success or failure of acquisition are distinguished (step 26g) and substitute acquisition is successful After starting address translation function 200c-2 and performing address translation to contents (step 26h), The contents after conversion are written in 200f of cache functions (step 26i), and they are made to peruse contents to a user via 200f of cache functions (step 26b). When substitute acquisition fails in step 26g, the URL error counter is added (step 26m), and step 26d or subsequent ones are repeated. A circuit is cut after displaying the error message which shows that it was specified by the URL concerned and substitute acquisition of last contents went wrong by step 26e when a URL error counter exceeded an allowed value (step 26j) (step 26k).

It returns to the flow chart of drawing 6, and based on the official and personal partition for every URL, distinction of the official and personal affairs of access is distinguished at the time of the access termination to each URL (step 22), an official and personal partition is set as official and personal distinction flag 204f at it (step 23, step 28), and the processing after step 19 is repeated to return and a log out to display processing of the menu 500 of step 19.

thus, acquisition of communication link record in the data accounting approach and data accounting system of a gestalt of this operation -- increasing the efficiency -- a packet -- the number of processing of counting, and counting -- the processing time is lessened and an accounting function has the advantage that a high degree of freedom can be held.

That is, according to the data accounting approach and data accounting system of a gestalt of this operation, in the data communication of the passage packet quantity accounting mold which used the information network of Internet 300 grade, for example, it becomes possible to realize the use purpose-oriented specific charge of the information network and information resource which were used from the information communication terminal 100 of a computer 102 or personal digital assistant 101 grade.

Moreover, in the data communication using the information network of the Internet 300 grade by the information communication terminal 100, various and exact accounting is attained use purpose-oriented.

Moreover, it becomes possible to reconcile improvement in the convenience of the user by use of the information communication terminal 100 of official and personal combination, and a company, and rationalization of the tariff burden by clarification of the official and personal partition of the use tariff of the information communication terminal 100 or data communication.

Moreover, it becomes possible to realize various service provisions by setup of the various unit prices by the use purpose, data classification, etc. which are specified in

URL etc. on the Internet 300 etc.

Moreover, information, such as a use purpose-oriented use situation by the user of the information communication terminal 100, is grasped, and it becomes possible to realize exact marketing in data transmission services.

(Gestalt 2 of operation)

Drawing 11 is the block diagram showing an example of the data accounting approach which is the gestalt of other operations of this invention, and the data accounting structure of a system, and drawing 12 is a flow chart which shows an example of the operation.

With the gestalt 2 of this operation, the case where it applies to the electronic mail on the Internet 300 is illustrated. That is, the gestalt of this operation describes the use purpose as e-mail. Moreover, the same part as the gestalt 1 of operation omits explanation.

A design and installation of a 2-1. network It is the same as the gestalt 1 of operation.

2-2. Installation of the hardware of each function It is the same as the gestalt 1 of operation.

2-3. Packet collection It is the same as the gestalt 1 of operation.

2-4. Authentication It is the same as the gestalt 1 of operation.

2-5. Induction of User by Menu (Navigation)

When authentication is successful, a menu is displayed in order to restrict transmission and reception of mail with a computer 102 or a personal digital assistant 101. When authentication goes wrong, it communicates with authentication function 200a, and checks that it is in the count of a failure limit, and authentication is made to redo. When it is over the count of a limit, that is displayed on a user and use is stopped.

Even if the mail address which transmits is a thing besides a network segment 201, the data communication surely comes to go via the network segment 201 of the gestalt of this operation by data communication path fixed function 200c.

Moreover, other than this, the mail address makes or classify and makes it record in the thing relevant to business using official and personal partition information, such as a mail address set up beforehand.

2-6. Control of a user's data communication path The path of data communication is fixed so that all a user's e-mail communication links may go via the network segment 201 of the gestalt of this operation using the below-mentioned remote mail substitute transfer facility 200c-3 of data communication path fixed function 200c, and address translation function 200c-4.

When a mail address is a thing in the network segment 201 of the gestalt of this operation, not using data communication path fixed function 200c, as for data communication, ** also surely goes via the network segment 201 of the gestalt of this operation. Moreover, it restricts in this case, and a user generates the communication link record which recorded to which mail address e-mail was sent, or from which mail address e-mail was received [both], and stores data communication path fixed function 200c in a communication link record database. Remote mail address substitute transfer facility 200c-3 which mention communication link record of the mail address out of the network segment 201 of the gestalt of this operation later generate communication link record. A user's ID, the date time of day, a transmission-and-reception place mail address, a user's IP address, a user's TCP port number, etc. are recorded on communication link record. All the packet information that goes via the network segment 201 of the gestalt of this

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operation realized by this function is saved in the packet collection database 206 as packet record by 200d of packet collection functions, and the specific charge of the telex rate for every mail becomes possible.

Like the conventional technique, when this function cannot be found, in order that the mail server and personal digital assistant, or a computer may carry out the direct communication of the data communication which transmits and receives the mail besides this network segment 201 from a personal digital assistant 101 and a computer 102, not passing through this network, no packet records can be saved but generation of account data becomes impossible.

2-7. Transfer of a remote mail address In order to enable it to use the mail address out of the network segment 201 of the gestalt of this operation, c-3 once acquires the mail address in the remote mail address substitute transfer facility 200 network segment 201 of the gestalt of this operation, and makes a personal digital assistant 101 or a computer 102 transmit or receive it. These remote mail substitute transfer facility 200c-3 are mounted as a part of data communication path fixed function 200c.

With reference to drawing 11 etc., the actual example of remote mail substitute transfer facility 200c-3 of operation is shown below. The case where e-mail is transmitted to an external mail address as an example is assumed. The address of "aaa.bbb.co.jp" and a user is set to "ccc@aaa.bbb.co.jp" for the address of the server of data communication path fixed function 200c. When the user wants to make e-mail transmitted to "zzz@xxx.yyy.co.jp", a mail address is rewritten as follows and it is referred to as "zzz#xxx.yyy.co.jp?ccc@aaa.bbb.co.jp." The part of "?" of this mail address is remote mail substitute transfer facility 200c-3. In fact, the character string this "?" and "#" serves as arbitration. If a mail address is specified in such a format, remote mail substitute transfer facility 200c-3 will transmit e-mail to the mail address specified by the character string before "?." "#" is substitution of "@."

These remote mail substitute transfer facility 200c-3 also generate communication link record in a communication link record database.

2-8. Address translation in real time Although the path of data communication is fixable using remote mail substitute transfer facility 200c-3, in order to operate this constantly, address translation function 200c-4 which a user with account changes into the mail address usually used on real time are needed by remote mail substitute transfer facility 200c-3.

in an above-mentioned example, the postabend section called "?ccc@aaa.bbb.co.jp" within the system of remote mail substitute transfer facility 200c-3 inserts automatically - - having -- "@" of the destination -- "#" -- rewriting **. That is, these address translation function 200c-4 analyze the mail which received a message on real time, they change it into the mail address which the user is usually using, and transmit e-mail after that. When a user's usual mail address is "ccc@111.222.co.jp" as an example, a mail address is analyzed on real time, it changes into "ccc@111.222.co.jp" from "ccc.@aaa.bbb.co.jp", and e-mail is transmitted.

All mails that this acquired by remote mail substitute transfer facility 200c-3 come to go via the network segment 201 of the gestalt of this operation. These address translation function 200c-4 are a part of remote mail substitute transfer facility 200c-3.

Cache of 2-9. mail The mail data which provided more users with data communication path fixed function 200c, remote mail substitute transfer facility 200c-3, and address

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translation function 200c-4, and carried out the cache of the mail data in order to make a load mitigate, while applying efficiently, and carried out the cache at the time of transmission and reception of mail of the simultaneous multiple address is used. This is realized in cache function manager 200c-5. The mail by which the cache was carried out is immediately eliminated after a transfer.

2-10. Generation of accounting information It is the same as the gestalt 1 of operation. If an operation of the whole mail transfer processing in the gestalt 2 of these above operations is illustrated, it will become like the drawing 12 flow chart.

Namely, if data communication path fixed function 200c is started in connection with a mail transfer (step 30), managing a predetermined transfer error in remote mail substitute transfer facility 200c-3 Transfer processing of e-mail is performed (step 31, step 32, step 33, step 34, step 40, step 39). In the case of transfer nature After performing address translation by address translation function 200c-4 (step 35), the existence of simultaneous multiple address transmission is distinguished (step 36). In multiple address ***** Use cache function manager 200c-5 (step 37), and e-mail delivery is performed directly [when other]. Access record for every e-mail use is performed in the data collection in protocol hierarchies, such as an electronic mail protocol above the hierarchy of TCP/IP, and is stored in a communication link record database (step 38). In this way, it is the same as that of the case of the gestalt 1 of above-mentioned operation to compare the data collected by the communication link record database with the collection result of 200d of packet collection functions to perform data collection in Ethernet level, and to perform mail address exception, i.e., use, purpose-oriented accounting.

According to the gestalt 2 of this operation, while the same effectiveness as the gestalt 1 of above-mentioned operation is acquired, the accounting in which an official and personal partition including mail service is possible is realizable.

Although concretely explained based on the gestalt of implementation of invention made by this invention person above, it cannot be overemphasized that it can change variously in the range which this invention is not limited to the gestalt of said operation, and does not deviate from the summary.

For example, voice coded data communication modes (a Voice over IP method, voice-over Frame Relay method, etc.) can also be adapted using the approach not only data communication but that the adaptation range of the data accounting technique of this invention is the same. It can be adapted also for the communication mode which transmits and receives voice and data to coincidence by this. Therefore, an official and personal partition can be performed also about a part for the voice message in a voice coded data communication mode.

Availability on industry According to the data accounting approach of this invention, in the data communication of a passage packet quantity accounting mold, the effectiveness that the use purpose-oriented specific charge of the information network and information resource which were used from information communication terminals, such as a computer and a personal digital assistant, is realizable is acquired.

According to the data accounting approach of this invention, in the data communication using the information network by the information communication terminal, the effectiveness that various and exact accounting is realizable for use purpose-oriented is acquired.

According to the data accounting approach of this invention, the effectiveness that

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improvement in the convenience of the user by use of the information communication terminal of official and personal combination and a company and rationalization of the tariff burden by clarification of the official and personal partition of the use tariff of an information communication terminal or data communication can be reconciled is acquired.

According to the data accounting approach of this invention, the effectiveness that the various service provisions by setup of the various unit prices by the use purpose, data classification, etc. are realizable is acquired.

According to the data accounting approach of this invention, information, such as a use purpose-oriented use situation by the user of an information communication terminal, is grasped, and the effectiveness that exact marketing in data transmission services is realizable is acquired.

According to the data accounting system of this invention, in the data communication of a passage packet quantity accounting mold, the effectiveness that the use purpose-oriented specific charge of the information network and information resource which were used from information communication terminals, such as a computer and a personal digital assistant, is realizable is acquired.

According to the data accounting system of this invention, in the data communication using the information network by the information communication terminal, the effectiveness that various and exact accounting is realizable for use purpose-oriented is acquired.

According to the data accounting system of this invention, the effectiveness that improvement in the convenience of the user by use of the information communication terminal of official and personal combination and a company and rationalization of the tariff burden by clarification of the official and personal partition of the use tariff of an information communication terminal or data communication can be reconciled is acquired.

According to the data accounting system of this invention, the effectiveness that the various service provisions by setup of the various unit prices by the use purpose, data classification, etc. are realizable is acquired.

According to the data accounting system of this invention, information, such as a use purpose-oriented use situation by the user of an information communication terminal, is grasped, and the effectiveness that exact marketing in data transmission services is realizable is acquired.

CLAIMS

(57) [Claim(s)]

[Claim 1] It is the data accounting approach charged according to the amount of the data on the information network which the user delivered and received using the information communication terminal. In delivering and receiving said data via the network segment set as said information network The 1st address information which specifies the information resource on said information network generated in case said user delivers and receives said data While making said data to said user deliver and receive via said network segment by updating dynamically so that the 2nd address information which specifies the network segment set as said information network may be included About

said 1st address information which classifies the amount of the data concerned, totals for every use purpose of said data in said network segment, and specifies said information resource, as said use purpose. The data accounting approach characterized by setting up the official and personal partition information that individual use of said user and the use on the business in the organization to which said user belongs is distinguished, totaling the amount of said data separately based on said official and personal partition information, and charging said user and said organization separately.

[Claim 2] The data accounting approach characterized by totaling the amount of said data for said each use purpose of every by transmitting to said information communication terminal of said user of a requiring agency once acquiring said data of the information resource on said information network which said user demands in said network segment in the data accounting approach according to claim 1.

[Claim 3] The data accounting approach characterized by classifying the amount of the data concerned according to collecting and collating the address information on said information network which accompanies said data in the data accounting approach according to claim 1 or 2 in a different protocol hierarchy in the communications protocol of said data in said information network, and totaling for said every use purpose of said data by it.

[Claim 4] The data accounting approach characterized by charging in the data accounting approach according to claim 1, 2, or 3 by setting up either [at least] the charging rate of said data, or a claim place for said every use purpose.

[Claim 5] It is the data accounting approach which said information network is the Internet which delivers and receives said data by TCP/IP communication link in the data accounting approach according to claim 1, 2, 3, or 4, and said information communication terminal is a migration communication terminal or a personal computer, and is characterized by said data being the packet of said TCP/IP communication link.

[Claim 6] The network segment which is the data accounting system charged according to the amount of the data on the information network which the user delivered and received using the information communication terminal, and is connected to said information network, When delivering and receiving said data via said network segment connected to said information network. The 1st address information which specifies the information resource on said information network generated in case said user delivers and receives said data. It has the address translation function dynamically updated so that the 2nd address information which specifies said network segment in said information network may be included. A data communication path control means to fix the transfer path of said data about said specific user so that said network segment may be passed, The 1st data collection means which collects the 1st information containing the amount of the data concerned about said data which pass said network segment, The 2nd data collection means which collects the 2nd information that the use purpose by said each user of said data which pass said network segment can be specified, An accounting information generation means to generate the accounting information about said data for said every use purpose based on said 1st and 2nd information is included. Said 2nd information It is the official and personal partition information that individual use of said user and the use on the business in the organization to which said user belongs is distinguished as said use purpose. The data accounting system characterized by totaling the amount of said data separately and being separately charged in said user and said

organization based on said official and personal partition information.

[Claim 7] The data accounting system characterized by including a user authentication means to specify said user of said information communication terminal, and a menu presentation means to guide access to said information network which went via said network segment by said user, in a data accounting system according to claim 6.

[Claim 8] It is the data accounting system characterized by said 1st and 2nd data collection means collecting said 1st and 2nd information in a data accounting system according to claim 6 in a different protocol hierarchy in the communications protocol of said data in said information network.

[Claim 9] It is the data accounting system characterized by including the information-resource substitute acquisition function transmitted to said information communication terminal of said user of a requiring agency once acquiring said data of the information resource on said information network where said user demands said data communication path control means in a data accounting system according to claim 6 in said network segment.

[Claim 10] It is the data accounting system which said information network is the Internet which delivers and receives said data by TCP/IP communication link in a data accounting system according to claim 6, and said information communication terminal is a migration communication terminal or a personal computer, and is characterized by said data being the packet of said TCP/IP communication link.

[Claim 11] It is the data accounting system by which said accounting information generation means is characterized by charging either [at least] the charging rate of said data, or a claim place by setting up for said every use purpose in a data accounting system according to claim 6.

[Claim 12] The amount of all the data on said information network which said user delivered and received in the data accounting approach according to claim 1 using said each information communication terminal, the data accounting approach characterized by said use purpose using the difference of the amount of said data delivered and received via said network segment for individual use of said user, the use on the business in the organization to which said user belongs, and the total of the amount of said data which were alike and responded.

[Claim 13] In a data accounting system according to claim 6 said accounting information generation means The amount of all the data on said information network which said user delivered and received using said each information communication terminal, the data accounting system characterized by said use purpose using the difference of the amount of said data delivered and received via said network segment for individual use of said user, the use on the business in the organization to which said user belongs, and the total of the amount of said data which were alike and responded.